a) a transmitter operably arranged for producing a train of pulse to pulse coherent signals and for transmitting the signals into a region of atmosphere as a beam;

b) a receiver operably arranged for receiving resultant signals from an intersection of the beam with acoustic signals in the region of atmosphere; and

c) a detector operably connected to the receiver and arranged for determining a presence of the acoustic signals from a phase difference between successive resultant signals.

24. The remote sound detector of claim 23, wherein the detector is operative for determining phase differences between immediate successive pairs of the resultant signals.

25. The remote sound detector of claim 23, wherein a laser source is operably arranged for producing a laser beam, and a modulator for modulating the laser beam to produce the train of signals.

26. The remote sound detector of claim 23, wherein the beam is directed to the region of atmosphere above possible sources of acoustic signals hidden from a field of view of an observer.

27. The remote sound detector of claim 25, wherein an interferometer is operably arranged for providing an interference pattern between the laser beam and each resultant signal.

28. The remote sound detector of claim 27, wherein a photoreceiver is operably arranged for detecting and producing an output signal corresponding to changes in each interference pattern.

29. The remote sound detector of claim 28, wherein a sampler is operably arranged for sampling the output signals from the photoreceiver, and a comparator is operably arranged for comparing the output signals from immediate successive pairs of outputs from the photoreceiver to produce a result.

30. The remote sound detector of claim 29, wherein an accumulator is operably arranged for accumulating each result.

31. The remote sound detector of claim 29, wherein a loudspeaker is operably arranged for reproducing audible output of the result.

32. The remote sound detector of claim 28, wherein a sampler is operably arranged for sampling the output signals from the photoreceiver at different ranges to the regions of atmosphere, and a processor is arranged for determining a curvature of an acoustic signal wavefront from a possible source, for determining a first circle from the wavefront substantially perpendicular to the beam which intersects the acoustic signal, for calculating a second circle as for the first circle with a beam directed to a different region of atmosphere, and for locating a possible source of acoustic signal as the point that the first and second circles join.

33. A method of remote sound detecting, comprising the steps of:

a) transmitting a train of pulse to pulse coherent signals into a region of atmosphere as a beam;

b) receiving resultant signals from an intersection of the beam with acoustic signals in the region of atmosphere; and

c) determining a presence of the acoustic signals from a phase difference between successive resultant signals.

34. The method of claim 33, including determining the phase difference between immediate successive pairs of the resultant signals.

35. The method of claim 33, including producing the train of signals by producing a laser beam and modulating the laser beam.

36. The method of claim 33, including directing the beam to the region of atmosphere above possible sources of acoustic signals hidden from a field of view of an observer.

37. The method of claim 35, including providing an interference pattern between the laser beam and each resultant signal.

38. The method of claim 37, including detecting and producing an output signal corresponding to changes between each interference pattern.

39. The method of claim 38, including sampling the output signal, comparing the output signals from immediate successive pairs of the output signals, and producing a result.

40. The method of claim 39, including accumulating each result.

41. The method of claim 39, including providing an audible output of the result.

42. The method of claim 38, including sampling the output signal at different ranges to the regions of atmosphere, determining a curvature of an acoustic signal wavefront from a possible source, determining a first circle from the wavefront substantially perpendicular